PT03.02

Does malnutrition influence hospital reimbursement? A call for diagnosis and coding

A. Fernandes[1], A. Pessoa[2], M. A. Vigário[3], H. Jager-Wittenaar[4, 5], J. Pinho[3,*]

[1]Instituto de Saúde Pública da Universidade do Porto, Portugal, [2]Serviço de Medicina, Centro Hospitalar do Médio Ave, Portugal, [3]Serviço de Nutrição, Centro Hospitalar do Médio Ave, Portugal, [4]Research Group Healthy Ageing, Allied Health Care and Nursing, Hanze University of Applied Sciences, The Netherlands [5]Department of Maxillofacial Surgery, University of Groningen, University Medical Center Groningen, The Netherlands

[*]Correspondence to: joao.pinho@chma.min-saude.pt

INTRODUCTION AND OBJECTIVES

Worldwide, malnutrition affects 20-50% of hospitalized patients.[1] In Portugal, a recent multicenter study showed that 73% of internal medicine inpatients were malnourished.[2]

Since malnutrition contributes to a poorer prognosis, its diagnosis and documentation are essential not only to improve patient care but also to correctly report associated hospitalization costs (HC), allowing hospitals to obtain the appropriate reimbursement. However, knowledge is lacking on whether malnutrition is sufficiently identified and coded in internal medicine inpatients, and on how this may affect hospital reimbursement.

We aimed to determine how malnutrition diagnosis in an internal medicine ward setting influences potential hospital reimbursement

METHODS

A cross-sectional study was conducted at the internal medicine ward of CHMA, EPE. Admitted patients were screened by Nutritional Risk Screening 2002 (NRS 2002) according to national guidelines.[3] Patients classified as "at risk for malnutrition" were assessed by the Patient-Generated Subjective Global Assessment (PG-SGA)[4,5] and categorized as well nourished (PG-SGA A), moderate/suspected malnutrition (PG-SGA B), or severely malnourished (PG-SGA C). For each patient, medical coders made two coding simulations: one including the malnutrition diagnosis (ICD-10 codes E46 for "PG-SGA B" and E43 for "PG-SGA C"[6]), and the other not including the malnutrition diagnosis. The Diagnosis-Related Group and Severity of Illness were determined, allowing the calculation of HC according to Portuguese Ministerial Directive number 207/2017.[7] The increase of HC was extrapolated to the number of patients admitted during 2018 to obtain the estimated unreported annual HC.

RESULTS

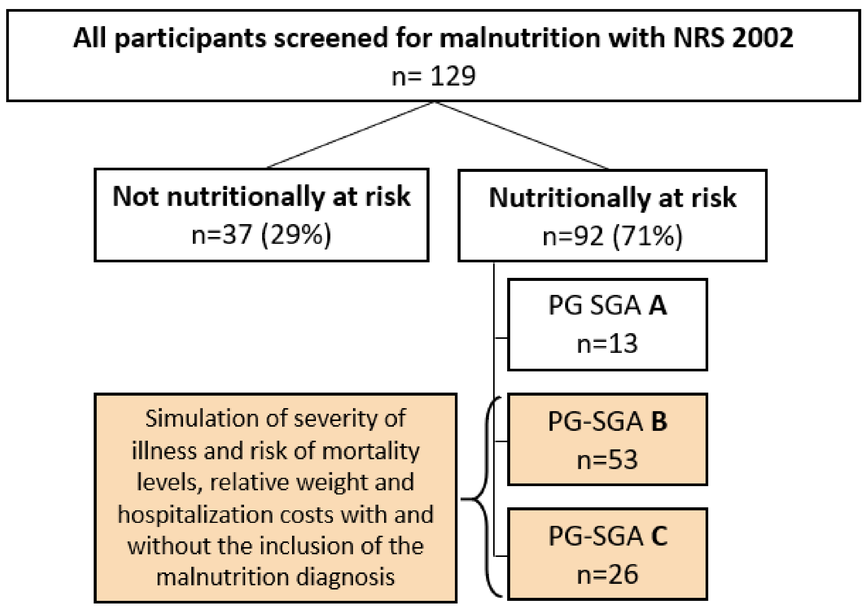


Fig 1: Nutritional status of the participants; 61% were malnourished.

Table 1: Characterization of patients according to their nutritional status

	Total (n=129)	Well nourished (n=50)	Malnourished (n=79)	*p* value
Male sex, n (%)	73 (56.6%)	28 (56.0%)	45 (57.0%)	0.914
Age (years), mean ± SD	76.20 ± 13.57	73.76 ± 13.99	77.75 ± 13.15	0.104
Length of stay (days), median (IQR)	9 (6-17)	8 (6-13)	10 (7-18)	0.073
Readmitted during previous year, n (%)	37 (28.7%)	15 (30.0%)	22 (27.8%)	0.792
Referred to clinical nutritionist, n (%)	13 (10.1%)	3 (6.0%)	10 (12.7%)	0.368

IQR: interquartile range; SD: standard deviation

Table 2: Risk of mortality (**A**) and severity of illness (**B**) with and without malnutrition diagnosis in malnourished patients

A)

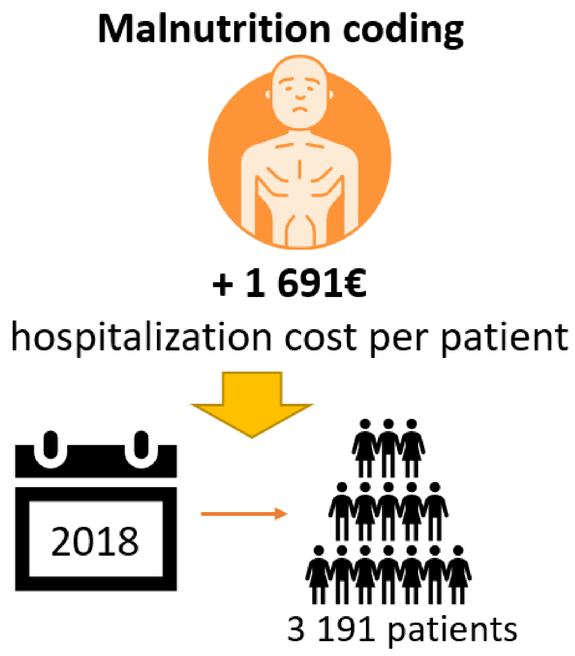
Risk of mortality level **without** malnutrition (n)	Risk of mortality level **with** malnutrition (n) 1	2	3	4	Total
1	5	4	0	0	9
2	-	20	8	0	28
3	-	-	32	3	35
4	-	-	-	7	7
Total	5	24	40	10	79

Patients whose risk of mortality level with malnutrition = risk of mortality level without malnutrition; Patients whose risk of mortality level with malnutrition > risk of mortality level without malnutrition

B)

Severity of illness level **without** malnutrition (n)	Severity of illness level **with** malnutrition (n) 1	2	3	4	Total
1	0	3	1	0	4
2	-	8	18	0	26
3	-	-	32	9	41
4	-	-	-	8	8
Total	0	11	51	17	79

Patients whose severity of illness level with malnutrition = severity of illness level without malnutrition; Patients whose severity of illness level with malnutrition > severity of illness level without malnutrition



Coding malnutrition → Increased the Risk of Mortality in 19% (15/79) of patients (p<0.001)
→ Increased the Severity of Illness in 39% (31/79) of patients (p<0.001)

1 297 011 €

CONCLUSIONS

- ✓ Diagnosing malnutrition in internal medicine wards largely increases calculated hospitalization costs and potential hospital reimbursement;
- ✓ The prevalence of nutritional risk and malnutrition at hospital admission in an internal medicine ward of a regional Portuguese hospital is high;
- ✓ The high prevalence of malnutrition corroborates the need for a systematic malnutrition screening program - our findings show poor recognition of malnutrition, considering the number of nutritionist referrals;
- ✓ These results bring positive implications to our clinical practice:
  - ✓ True determination of malnutrition prevalence may justify the need for additional nutritionists, whose cost would be compensated by the increased reimbursement set forward by correctly coding malnutrition;
  - ✓ The routine screening, assessment and treatment of malnutrition would likely decrease hospitalization costs, since it would allow for its proper management, lowering adverse clinical outcomes.

REFERENCES

1) Norman K, Pichard C, Lochs H, Pirlich M. Prognostic impact of disease-related malnutrition. Clin Nutr. 2008;27:5-15
2) Marinho RC, Lopes MS, Pessoa A, et al. Malnutrition in Portuguese Internal Medicine Wards: Multicenter Prevalence Study. Clin Nutr. 2018;37, S239
3) Ministério da Saúde, Secretário de Estado Adjunto e da Saúde. Despacho n.º 6634/2018. Diário da República, Série II, nº 1292018-07-06. p. 18713-4
4) Ottery FD. Definition of standardized nutritional assessment and interventional pathways in oncology. Nutrition 1996;12:S15-9
5) Pinho JP. Translation, cross-cultural adaptation and validation of the Scored Patient-Generated Subjective Global Assessment (PG-SGA) for the Portuguese setting. Porto, Portugal: Faculty of Nutrition and Food Science of University of Porto; 2015
6) Jennifer L, Johnston J, Hoppman M. Implementation of malnutrition coding: a success story. Support Line. 2015;37:12-6
7) Ministério da Saúde. Portaria nº207/2017. Diário da República, Série I, Nº 1322017-07-11. p. 3550-708